

REMARKS

The Office Action of June 10, 2008 has been received and carefully reviewed. The following remarks form a full and complete response thereto. Clams 11-19 are pending. Reconsideration and allowance of the pending claims are requested.

Claim rejection under 35 U.S.C. § 103(a)

The Office Action rejected claims 11-19 under 35 U.S.C. § 103(a) as being obvious over U.S. Pat. No. 6,647,678 to Zambelli in view of U.S. Pat. No. 6,065,257 to Nacey. Applicant respectfully traverses the rejection because the combination of Zambelli and Nacey fails to disclose each limitation of the claims. Additionally, a person of ordinary skill in the art would not and could not have modified the disclosure of Zambelli with Nacey to arrive at the claimed subject matter.

Claim 11, upon which claims 12-19 depend, recites a beam attachment system having two posts, a beam, and at least one beam tie, where the beam is connected to the beam tie. The beam and the beam tie are mounted sliding relative to each other according to a finite sliding portion. The posts are stressed by the beam to push them apart and stressed by the beam tie to pull them together.

Zambelli discloses a device for connecting a beam to pillars having a first means (10) constituted by connecting means of the interlocking type for connecting two end regions (1a) of a beam (1) to the pillars (2) that must support the beam. Col. 2 ll. 64-67. The first means (10) comprises a cavity (11) in the pillar (2) which accommodates a bracket (12) which is fixed to the end region (1a). See col. 3 ll. 28-33. The ties (31) are fixed to the beam (1) by tightening a nut (47) on the ties (31). Col. 4 ll. 31-36. The tightening allows tensioning of the ties (31) so as to preload the beam (1) in an upward direction, achieving an effect which is similar to prestress and therefore giving the beam (1) greater resistance to the loads that it will have to bear. See col. 5 ll. 60-64.

Zambelli further discloses that the device has a second means (30) comprising at least two rigid inclined ties (31) coupled and fixed to the beam (1) for connecting two intermediate region (1b) of the longitudinal extension of the beam (1) to the pillars (2) by fixing each tie (31) to a pillar (2). See col. 2 l. 64-col. 3 l. 9; col. 5 ll. 1-9.

Nacey discloses a tendon alignment assembly (20) and method for aligning and providing a bearing surface for externally exposed tendons (10) below a weight bearing structure. Abstract. The tendons (10) are deployed along the underside of bridge beam (3) and anchored at each end of the bridge beam by a respective nut (12). Col. 3 ll. 4-5. Tendons (10) are post-tensioned by using anchorage devices (70). Col. 3 ll. 27-28. Post-tensioning tendons (10) creates compressive forces in the longitudinal direction on bridge beam (3) which increases its load bearing ability. Col. 3 ll. 28-32. Thus, during dynamic loading when bridge beam (3) bends, flexes, or otherwise changes shape, the tensioned tendons (10) minimize deflections and stresses in bridge beam (3) and assist the beams to return to their normal state. Col. 5 ll. 62-67.

Nacey's tendon alignment assembly (20) further comprises tendon slide plate (30) integrally attached to the bridge beam (3) and comprises a tendon alignment shoe (50) which is in sliding and rotating engagement with the tendon slide portion (30). Col. 3 ll. 45-47, col. 4 ll. 7-10. The tendon alignment shoe (50) comprises a cavity (54) to receive tendon (10). Col. 4 ll. 51-53. During the dynamic loading, tendon alignment shoe (50) can slide or rotate relative to tendon slide plate (30) (bridge beam 3) thereby eliminating any concentrated stress in tendon (10). Col. 6 ll. 1-4.

The Examiner conceded that Zambelli fails to disclose a beam and at least one beam tie which are mounted sliding relative to each other as recited in claim 11. Office Action at 3. Nacey fails to remedy this deficiency and the Examiner conceded this deficiency. Even while maintaining verbatim the prior Office Action's assertion that Nacey Figs. 1 and 2 reference no. 10 is a beam tie, compare Office Action at 3-4 with Office Action dated Dec. 28, 2007 at 3-4, the Examiner conceded that reference no. 10 "does not connect the extreme outer beams (4) of the bridge to the bridge itself." Office action at 5. Nacey teaches that figure reference no. 10 is a beam tendon which, as the Examiner has conceded, is attached only to the beam. See, e.g., Abstract, Fig 1. As a consequence, the tendons (10) have no effect on the posts (4), rather, only on the bridge beam. Indeed, the tendons (10) stress the bridge beam but in contrast to the present claims, do not and cannot stress the posts (4) because there are no links between the posts (4) and the tendons (10). Because Nacey and Zambelli, together and singly, fail to disclose, teach, or suggest "the beam and the beam tie are mounted sliding relative to each other according to a

finite sliding portion,” the rejection of claims 11-18 is improper and Applicant requests that it be withdrawn.

The combination of Zambelli and Nacey also fails to disclose, teach, or suggest “the posts are ... stressed by the beam tie to pull them together” as recited in claim 11. Zambelli fails to disclose this limitation, teaching that each beam tie (31) connects only to a single pillar (2) and therefore cannot stress more than one pillar. That is, Zambelli requires two beam ties (31) to stress two pillars (2). Nacey does not remedy the deficiencies of Zambelli. As discussed above, Nacey fails to disclose a beam tie; Nacey therefore cannot disclose that a post is stressed by a beam tie. Because Nacey and Zambelli, together and singly, fail to disclose, teach, or suggest “the posts are ... stressed by the beam tie to pull them together,” the rejection of claims 11-19 is improper and Applicant requests that it be withdrawn.

The combination of Zambelli and Nacey fails to disclose, teach, or suggest “the posts are stressed by the beam to push them apart,” as recited in claim 11. The Examiner has maintained the argument that “the posts would be inherently stressed by the beam to push them apart” Office Action at 2. The Examiner further explained that “any horizontal beam being placed between and in contact with two vertical beams exerts an outward, repelling force or stress to the vertical beams thus pushing them apart.” Office Action at 4. These inherency assertions are erroneous both as a matter of law and of fact. To establish inherency, the reference “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999) (emphasis added).

In support of these inherency assertions, the Examiner cited Winter, Design of Concrete Structures, in particular pages 326-327 and specifically Fig. 6.19a. By citing Winter, the Examiner concedes that a person of ordinary skill in the art can rely upon its teachings. But in view of Winter, the Examiner’s inherency assertions are obviously not correct. Fig. 6.19b shows a horizontal beam being placed between and in contact with two vertical beams. The posts are stressed by the beam, but the beam does not push them apart. Rather, the left post is pulled, rather than pushed. Thus, because ‘an outward, repelling force or stress to vertical beams pushing them apart’ would not be recognized as necessarily present by a person of ordinary skill

in the art when ‘any horizontal beam is placed between and in contact with two vertical beams,’ such stress is not inherent.

(Note also that figure 6.19a shows that the beam exerts forces on the vertical beams which bends them away from each other (bowing effect) due to the fact that the horizontal beam is rigidly fixed to the vertical beams (see angle of 90° that is maintained between them). In other words, the vertical beams are not pushed apart by the horizontal beam in figure 6.19a.)

In making an inherency argument, the Examiner concedes that Zambelli does not expressly disclose “the posts are stressed by the beam to push them apart” as recited in claim 11. In fact, Zambelli concedes that the pillars are not stressed by the beam to push them apart by disclosing that the beam rests on a bracket extending from the pillars. See, e.g., col. 3 l. 56; col 5 l. 49. Nacey does not remedy the deficiency of Zambelli, disclosing a beam which is situated with a pillar such that the beam can only impart a vertical load. See Fig. 1. Therefore, for at least the reason that the combination of Zambelli and Nacey fail to disclose, teach, or suggest “the posts are stressed by the beam to push them apart,” the rejection of claim 11 and dependent claims 12-19 is improper and Applicant requests that it be withdrawn.

Additionally, the rejection of claim 11-19 in view of Zambelli and Nacey is improper because a person of ordinary skill in the art would not and could not have modified the disclosure of Zambelli with Nacey to arrive at the claimed subject matter. The manner in which the Examiner combined Zambelli with Nacey does not correspond to a realistic approach that a person skilled in the art would have followed.

As a preliminary remark, it can be noted that Zambelli and Nacey (and the claimed subject matter as well) are related to providing for increased loading of a beam placed between posts such as is the case in bridges. So, the person of ordinary skill in the art could have considered combining Zambelli with Nacey. The question is, however, to determine how the person of ordinary skill in the art would and could have combined these documents.

To achieve the aim of providing for increased loading, Zambelli teaches preloading the beam in an upward direction for achieving an effect similar to prestress for giving a greater resistance to the beam. See col. 5 ll. 60-64. Such preloading is obtained by tightening the nut (47) on the ties (31) while the beam is maintained by the connecting means (10) of the interlocking type which connect the beam (1) to the pillars. In other words, the combined effect

of the ties and the connecting means at each end of the beam is to create a bending effect on the beam so that the middle of the beam is stressed upwardly. Thus, when loading the beam, it will offer a higher resistance to the weight than without the prestress caused by the ties.

In contrast to Zambelli, Nacey teaches increasing the strength of the beam by creating compressive forces in the longitudinal direction on bridge beam (3). See col. 3 ll. 27-32. This effect is achieved with the tendons (10) that are deployed along the underside of bridge beam (3) and anchored at each end of the bridge beam, the tendons being tensioned by a respective nut to provide the compressive forces. However, it is clear that the tendons do not provide relief to the beam by supporting at least partly the weight of the beam. As a consequence, Nacey does not preload the beam in an upward direction as does Zambelli, but only in a longitudinal direction.

Thus, if a person of ordinary skill in the art had wished to improve the strength of Zambelli, he would have merely added the compressive system of Nacey to Zambelli in order to add the technical effect provided by each system (preload in upward direction + longitudinal compression).

In other words, the combination of Zambelli with Nacey would have resulted in:

- keeping as such the ties (31) of Zambelli fixed to the beam (1) and to the pillar (2) and the connecting means (10) of the interlocking type which connect the beam (1) to the pillars, thereby providing the preload of the beam in the upward direction; and
- adding the tendons (10) of Nacey to the beam of Zambelli so that the tendons are deployed along the underside of the beam of Zambelli and anchored at each end of this beam, the tendons being tensioned by a respective nut to provide compressive forces to the beam.

However, this combination would not have resulted in the claimed invention. For example, the posts would not have been stressed by the same beam tie to pull them together as recited in the present claims.

Moreover, the person of ordinary skill in the art would not have been motivated to combine Zambelli with Nacey as asserted by the Examiner. The Examiner asserted that “[i]t would have been obvious to one having ordinary skill in the art at the time of invention to modify the beam attachment system of Zambelli with the sliding plate and shoe (50) in order to easily adjust the tension of the beam tie for better beam stability and strength.” Office Action at 3.

This assertion would not have made sense to a person of ordinary skill in the art.

Indeed, each tie in Zambelli passes through a through-hole (34) inside of the beam. This through-hole (34) does not offer any place for locating a sliding plate and shoe (50). Further, the through-hole (34) already allows sliding of the tie in it without friction as the through hole 34 and the tie are both straight. Furthermore, even by adding the sliding plate and the shoe of Nacey to Zambelli as mentioned by the Examiner, it would not result to the claimed invention.

Indeed, the resulting system would not comprise a beam tie to pull the posts together as is claimed. On the contrary, in the resulting system, a single beam tie (31) of Zambelli would not have pulled the posts together as claimed: this effect can only be provided in the resulting system by the combination of the two beam ties (31) at each end of the beam (because one beam tie does not connect both posts). As a consequence, the claimed subject matter is not obvious over Zambelli in view of Nacey and the Applicant requests that the rejection of claims 11-19 be withdrawn for at least the foregoing reasons.

In view of the above remarks, it is believed that the claims satisfy the requirements of the patent statutes and are patentable over the cited art. Reconsideration of the instant application and early notice of allowance are requested. The Examiner is invited to telephone the undersigned if it is deemed to expedite allowance of the application.

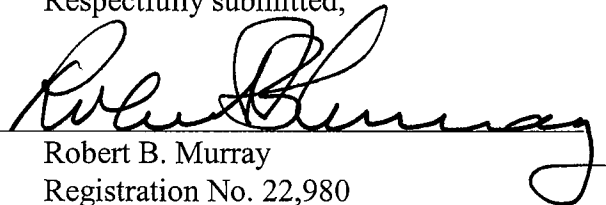
In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,

Date:

Oct 10, 2008

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